

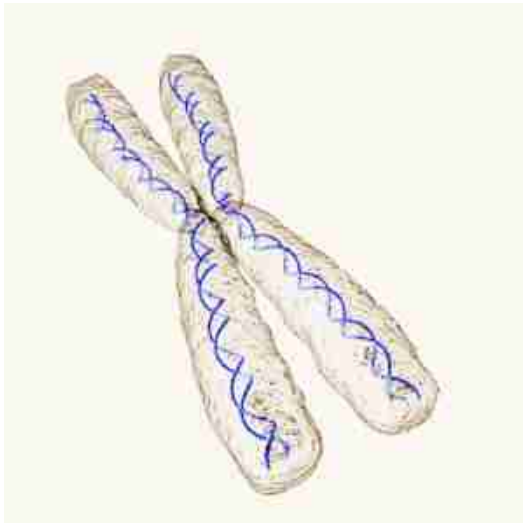
1. Animal cells and plants cells have many similarities, and some differences as well. Please list 3 key differences in their *structure* below.

K / 24
T / 7
C / 10
A / 9

Total / 50

3 K

2. Using the images below, label **chromosomes**, **DNA**, **genes** and **base pairs**. Draw your arrows carefully ... if we can't tell what it's pointing to, you will not be awarded marks!



2 A

3. Of the four medical imaging technologies that we studied, which would you use in each of the following situations?

A patient has had a stroke, and her brain needs to be checked for bleeding.

2 A A pregnant woman wants to know the sex of her baby.

A man who fell off of a balcony needs to be checked for fractured bones.

A man is believed to have a damaged heart ... we need to see it in 3D.

4. Imagine that you're a molecule of water in the soil below a plant. Describe your journey from the soil to the leaves, and what could happen once you enter the leaf. Include the following terms in your story: *photosynthesis, roots, transpirational pull, xylem, phloem, leaves*.

6 C

5. Describe what is a **tumour** and why may it be later diagnosed as **cancer**?

2 K

6. Match the organelles below to their functions.

5 K

_____ Nucleus	A. Storage of sugars and proteins
_____ Ribosomes	B. Converts glucose into energy for the cell.
_____ Endoplasmic reticulum	C. Filaments and tubules that provide a framework for the cell
_____ Golgi apparatus	D. Sorts and packages proteins
_____ Chloroplasts	E. Control Centre of the Cell
_____ Mitochondria	F. The fluid-like matrix that holds the organelles
_____ Cytoplasm	G. Creates protein
_____ Cytoskeleton	H. Found only in plant cells, these are responsible for photosynthesis
_____ Vacuole	I. Connected to the nucleus, responsible for shuttling nutrients in and out of the nucleus
_____ Cell Wall	J. Rigid outer layer of plant cells

7. Canada currently funds certain types of stem cell research. **Explain two advantages** of using stem cells in the medical field.

2 T

8. While president, George W. Bush prevented taxpayer money from funding embryonic stem cell research. Give **two valid arguments against** using embryos in stem cell research.

2 T

9. Describe the inside of a chloroplast. Use the terms *chlorophyll*, *thylakoid* and *grana*.

3 A

10. What are the three tenets of cell theory?

3 K

11. Describe *how* a tumour may form. Specifically, explain what changes inside a cell to make it different, and what causes this change to happen.

2 A

12. Match each organ system to its function.

3 K

- | | | |
|-------|----------------------|--|
| _____ | Endocrine System | A. Allows oxygen to enter our bodies |
| _____ | Integumentary System | B. Urination |
| _____ | Excretory System | C. Allows us to sense the environment around us |
| _____ | Nervous System | D. Covers the outside of our body and its organs |
| _____ | Respiratory System | E. Hormone Production |
| _____ | Circulatory System | F. Distributes oxygen throughout our bodies |

13. Why does maple sap accumulate faster in the daytime than at night?

1 T

14. What are two advantages and two disadvantages of **DNA Screening**?

2 T

Advantages	Disadvantages
-	-
-	-

15. Explain the process of cell division. Mention each of the four stages of mitosis, and explain (or sketch) what happens in each.

$\overline{2K}$

$\overline{4C}$

Multiple Choice – Circle the best answer for each question.

1. Which of the following is **not** one of the base pairs?

- a) D
- b) A
- c) C
- d) T
- e) G

2. Which of the following is **not** a mutagen?

- a) X-Rays
- b) Burnt toast
- c) Cigarette smoke
- d) Olive Oil
- e) Sunlight

6 K 3. Fat, bone and blood are examples of _____ tissue.

- a) epithelial
- b) nervous
- c) muscle
- d) connective

4. This type of tissue is responsible for movement in animals.

- a) epithelial
- b) nervous
- c) muscle
- d) connective

5. The respiratory system in humans is analogous to the _____ of plants.

- a) Stem
- b) Flower
- c) Xylem
- d) Phloem
- e) Leaves

6. In our story, which country did **not** play a role in collecting, processing or using the heart patient's blood/stem cells?

- a) United States
- b) Dominican Republic
- c) South Korea
- d) Isreal